

Chapter 2



Bill Thompson

Brown thrasher

Alternatives

- Introduction
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Introduction

This chapter presents:

- Our process for formulating management alternatives.
- A description of the two management alternatives we evaluated in detail, and their relationship to the Purpose and Need of our proposal.
- Alternatives and actions considered but eliminated from detailed study.

NEPA requires Federal agencies to evaluate a reasonable range of alternatives. Reasonable alternatives are those that are relevant to achieving the purpose and need of the proposal and are feasible for implementation. The development of alternatives as a part of the NEPA compliance process allows the Service to work with the public, stakeholders, interested agencies, and other partners to formulate alternatives that respond to issues and concerns identified during the planning process.

The two alternatives described in detail in this chapter include a “no action” alternative required by NEPA and our proposed action. The alternatives describe complementary management approaches for achieving the missions of the Service and the Refuge System and the purposes for which Great Thicket NWR is proposed to be established, while responding to issues and opportunities identified during the planning process.

Although many ideas were discussed for the alternatives, in the end we decided there was only one reasonable alternative, as illustrated in alternative B below. Alternative B is the Service’s Proposed Action, or Preferred-Alternative, because we believe it represents the best way to accomplish the stated purpose and need of this final LPP/EA. Alternatives A and B are described in more detail below, along with maps, tables, and figures to further illustrate the alternatives.

Alternative A – No Action

NEPA requires that a “no action” alternative serve as a baseline to which all other alternatives are compared. Under alternative A, there would be no additional Service acquisition authority to augment collaborative partnership efforts. However, the Service and its partners would continue to protect and manage shrubland habitat throughout the Northeast with current resources.

As noted in chapter 1, shrublands and declining shrub-dependent wildlife species have been recognized as high priorities for conservation in the Northeast by numerous state-wide and national plans. In addition, the NEC was classified in 2006 by the Service as a candidate species for Federal protection under the ESA, though the Service decided in 2015 the NEC would not need Federal protection. The NEC has also been designated by the NALCC as a surrogate species, thus representing an entire suite of shrubland-dependent wildlife. As a former candidate species and now as a surrogate species, the NEC has become a focal point for collaboration between the Service and its partners to continue prioritizing shrubland conservation and management now and into the future.

As stated in chapter 1, the NEC Conservation Strategy sets forth actions to address threats to the NEC and to show how conservation partners are implementing those actions to ensure the presence of rabbits into the future as well as precluding the need to place the species on the Federal Endangered Species List. In the strategy, the NEC Technical Committee, consisting of wildlife biologists from six Northeast States, the Service and the NRCS, delineated NEC Focus Areas throughout the species’ range. The delineation of the NEC Focus Areas was rooted in landscape-level habitat models and an analysis of land parcels across New England and New York. This information was

Indiana bat

Ann Froschauer/USFWS



then used by land management teams and local experts to ensure a connected network of habitats designed to meet NEC population goals. The methods used to delineate the NEC Focus Areas are described in greater detail in the Conservation Strategy and in Fuller et al. 2011.

The primary threat identified to NEC in the NEC Conservation Strategy is the modification of its habitat, including land-use changes (e.g., decreased logging and farming), habitat loss, and lack of natural disturbance, which has led to a dearth of suitable habitat. As a mechanism to address this key threat, each NEC Focus Area contains objectives for managing shrubland habitat on public and private lands. In order to make progress towards these objectives, each state convened a land management team, consisting of state and Federal agencies and non-governmental organizations. These land management teams identify habitat management priorities, develop habitat-creation projects, and identify resources to be used in carrying out those tasks. Such efforts help to ensure the timely creation of high-quality NEC habitat, which in turn provides high-quality habitat for a suite of early successional species.

To date, on-the-ground habitat work has been planned, initiated, or completed on over 8,000 acres on both public and private land within designated NEC Focus Areas (Fuller and Tur 2015). Nearly 600 acres have been protected for NEC. Partners working on habitat projects include states, private landowners, conservation landowners, tribes, municipal lands, utility companies, and many others. According to the strategies, the partners expect to continue management on 750 to 1000 acres per year (Fuller and Tur 2015).

The states that are within the NEC's rangewide distribution have committed over \$2.5 million in Federal and non-Federal funds, and are expected to deliver over 2,400 acres of habitat management, support for captive breeding, and monitoring in the near term. In addition, the states have received over \$3 million in other Federal and non-Federal funds to conduct research on NEC management and genetics. Over the long term, state land managers have scheduled habitat management, including prescribed burning, on over 18,000 acres of land.

Other partners have focused on enrolling private lands into federally funded shrubland management programs. Through 2014, we estimate that WMI contributed over \$1 million in technical assistance to landowners, conservation strategy development, performance database development, partnership coordination, and land management. By 2020, it is anticipated that the NRCS will manage over 10,000 acres using more than \$18 million in Farm Bill funds.

Below, we provide examples of how public and private partnership efforts have contributed to shrubland management and protection in NEC Focus Areas in all six states from approximately 2010 through 2014. Under Alternative A, all of these efforts would continue.

In Maine, the Cape Elizabeth-Scarborough NEC Focus Area is an active one that includes many partners working together to achieve NEC habitat goals, and is at the northern edge of the species' range. A total of 18 active habitat projects totaling 341 acres are ongoing, including a project on land owned by the town of Cape Elizabeth, habitat and research projects on the State-owned Crescent Beach and Kettle Cove State Parks, and several Rachel Carson NWR shrubland restoration projects. Together, these public lands affect over 100 acres of habitat. In addition to the public partners, there are 12 landholdings owned by private landowners, including Scarborough Land Trust and the Sprague Corporation, that are enrolled in habitat programs funded in part by NRCS and the Service's Partners for Fish and Wildlife Program.

Also in Maine, the NEC Focus Area known as “Eliot-The Berwicks” abuts the Mount Agamenticus to the Sea Conservation Initiative Focus Area and is close to the Rachel Carson NWR. Nine projects totaling 239 acres of planned or implemented management occur here. MDIFW is planning young forest management on approximately 20 acres in this NEC Focus Area. NRCS is also active here, funding 194 acres of habitat management on private lands under easement with land trusts or on privately owned woodlots. Other partners include a habitat restoration project spearheaded by Spectra Energy Corporation, and a study of the use of artificial burrows for NEC by the University of New England along the Central Maine Power transmission line.

In New Hampshire, the Seacoast NEC Focus Areas consist of farms and woodlot owners working closely with NRCS and NHFG towards private and public projects on over 50 parcels totaling over 1,265 acres of planned or implemented management. NRCS funds over 900 of these habitat acres and the rest include State and town lands. Partners here include several municipalities such as the towns of Rollinsford, Durham, Dover, Lee, and Madbury. Other partners include the Southeast Land Trust, Strafford County Conservation District, University of New Hampshire, Society for the Protection of New Hampshire Forests, and the National Audubon Society. NHFG Bellamy Wildlife Management Area has been used for demonstration of shrubland management techniques.

In the Merrimack Valley NEC Focus Area, located in south-central New Hampshire, the Service and its partners (e.g., NHFG, NRCS, WMI) have worked with private landowners on over 105 acres of habitat projects. Other active partners include the towns of Londonderry, Pelham, and Litchfield, as well as the Merrimack County Conservation District, Hillsborough County Conservation District, and Stonyfield Farm. In both the Merrimack Valley and Seacoast NEC Focus Areas, the utility company Eversource has altered management on over 1,500 acres of utility line to be more compatible with NEC.

In Massachusetts, the Plymouth NEC Focus Area contains a State-managed project totaling 100 acres. The MDFW has long-standing, successful partnerships with local landowners to conserve land and will continue these partnerships into the future.

Also in Massachusetts, the Mashpee-Falmouth NEC Focus Area has one of the largest and most diverse partnerships including State, Federal, and Tribal landowners as well as town and private land projects. In the heart of this focus area’s pitch pine-scrub oak area there are over 200 acres of habitat being managed for shrubland-dependent wildlife. Partners include the town of Mashpee, Mashpee NWR, the Mashpee Wampanoag Tribe, the Orenda Wildlife Land Trust, The Trustees of Reservations, and Camp Edwards. The NRCS has contributed important funding for projects in this area.

The Southwest NEC Focus Area in Rhode Island is located along the south coast of Rhode Island and Narragansett Bay. Partners have planned and manage 464 acres of habitat. The RIDEM actively manages 244 acres of State-owned land within this focus area. The South Kingston, Narrow River, and Westerly land trusts, along with Rhode Island Audubon and The Nature Conservancy, as well as many private landowners, are working with the NRCS, WMI, and Partners for Fish and Wildlife to implement shrubland and young forest habitat projects. Shrubland management also occurs at John H. Chafee NWR, Ninigret NWR, and Trustom Pond NWR, all part of the Rhode Island NWR Complex.

Within two eastern Connecticut NEC Focus Areas-Pachaug and Ledyard Coast-there is an active landscape of young forest habitat management. Partners including NRCS, CT DEEP, the WMI, the National Fish and Wildlife

Foundation, and the Service have planned or implemented projects on 683 acres. Approximately half of these projects are on private lands, funded by NRCS, and the remainder are on State lands. In addition to managing their land, the Avalonia Land Trust and Stonington Land Trust educate the public about shrubland habitat projects. The Groton Sportsman's Club and Groton Open Space Association manage and conserve land focused on shrubland and young forest wildlife. Landowners in these NEC Focus Areas have also allowed CT DEEP wildlife biologists to radio-track NEC on their land to gain insight into eastern cottontail (*Sylvilagus floridanus*) interactions and NEC response to hunting.



Kelly Boland/USFWS

*New England cottontail
on Great Bay National
Wildlife Refuge*

In the western part of Connecticut around the Housatonic NEC Focus Areas, The Nature Conservancy has been working on its own land and with private landowners to both enhance and protect land for bog turtles, which also may benefit NEC. There is a similar focus on bog turtles within the Harlem-Housatonic NEC Focus Areas in eastern New York, where the Mid-Atlantic Center for Herpetology and Conservation has assisted with NEC survey efforts. Also in these NEC Focus Areas, partners including the CT DEEP and NRCS have approached landowners and are working towards viable shrubland projects. To date, a total of 230 acres are being planned and managed to create shrubland habitat.

In addition to partnering with many of the organizations mentioned above, Service programs are making additional contributions to shrubland management in the Northeast. The Service's Division of Wildlife and Sport Fish Restoration (WSFR) has distributed millions of dollars to our state partners for shrubland protection, restoration, and management. WSFR has also distributed funds to federally recognized Native American Tribes for their contribution to shrublands. For example, the Narragansett Tribe in Rhode Island received \$160,479 to monitor NEC populations and conduct shrubland management on tribal lands.

The Service's Partners for Fish and Wildlife Program funds shrubland management projects on lands not eligible for funding through Farm Bill programs, including corporate lands and privately owned tracts where active habitat projects have reached Farm Bill funding limits. Along with programs administered by the WMI and other partners, this program has managed approximately 1,043 acres for shrubland habitat from 2010 through 2014, thus benefiting NEC and other shrub-dependent species.

Several national wildlife refuges located adjacent to or near NEC Focus Areas have been protecting and maintaining shrublands as part of their regular management activities. These refuges include Rachel Carson, Parker River,

Wallkill, and Great Bay NWRs; Eastern Massachusetts and Rhode Island NWR Complexes; and the Silvio O. Conte National Fish and Wildlife Refuge. For example, Rachel Carson NWR has included in its Habitat Management Plan objectives for managing over 1,400 acres of early successional and maritime shrubland habitat. In 2014, Mashpee NWR took several management actions, including thinning and burning, to improve 110 acres of forest/shrubland habitat. Refuge staff did the same for another 80 acres in 2015. After Hurricane Sandy, DOI committed over \$285,000 to the rehabilitation of 190 acres of shrublands near coastal wetlands at Rachel Carson and Parker River NWRs and at Eastern Massachusetts and Rhode Island NWRs. Existing partnerships between refuges and other land-protection partners (state agencies, non-governmental organization, land trusts, etc.) present high-value opportunities to protect and manage valuable shrubland habitat.

Staff from the Service's Migratory Bird Program and Science Applications Program has also participated in efforts to conserve more shrubland in the Northeast. Biologists from these programs have participated in designing shrubland-dependent migratory bird models and surveys to help determine the locations of the highest-quality shrubland habitat in the Northeast. The Migratory Bird Program also works with public and private entities both in the United States and in other countries to set habitat and population goals for high priority shrubland-dependent birds whose populations are in decline.

Alternative B – The Service-Preferred Alternative

Under alternative B, all the Service and partnership efforts described in alternative A would continue. In addition, the Service would seek approval to establish the proposed Great Thicket NWR and to acquire in fee or easement 15,000 acres of shrublands and/or lands that would be managed primarily as early successional habitat. The authority to acquire new lands for the proposed refuge would be in addition to any acquisition authorities the Service currently has for existing national wildlife refuges in the Northeast Region. We believe that the establishment of a new refuge to address the issue of early successional habitat and shrubland loss would build upon and strengthen the Service's work in the Northeast, and would enable the Service to implement a landscape-level conservation program centered on the shrubland ecosystem.

As previously mentioned, the NEC Conservation Strategy was intended to design a landscape that would conserve the NEC. Since that species is a surrogate for an entire suite of shrubland-dependent species, we used that conservation design as a starting point for our proposal. As mentioned earlier in alternative A, state NEC land management teams set target acres of shrubland management on public and private lands. However, in order to meet the NEC Technical Committee's rangewide habitat and population goals for the rabbit, up to 15,000 additional acres of shrubland habitat would be needed, beyond existing efforts on secured lands within designated NEC Focus Areas (Fuller and Tur 2012). This estimated additional need provides the context for the scope of our proposal. Using the upper end of this range, we propose in alternative B to seek fee or easement acquisition authority for approximately 15,000 acres.

Landscape Conservation Design

After gaining PPP approval in 2012, we worked with the NEC Technical and Executive Committees, state land management teams, WMI, and other partners to determine where and how the Refuge System could make the highest and best contribution towards protecting shrublands, with an added emphasis on shrubland-dependent birds and federally listed species. We started at the landscape level with the 40-plus NEC Focus Areas delineated throughout the six Northeast states by the NEC Technical Committee. Some of these NEC Focus Areas are quite large, and with only 15,000 acres to work with, we narrowed our scope to key areas that would contribute to the Strategic Growth priorities

mentioned in chapter 1. In the end, we determined there were 10 NEC Focus Areas that could benefit from the additional tool of Federal land protection to secure habitat for the full suite of shrubland dependent wildlife.

The 10 NEC Focus Areas were still too large for a 15,000-acre proposal, so we turned our attention to the NEC model output which identified highly ranked parcels for NECs and associated shrubland species. Specifically, we focused our attention around clusters of the highest ranked parcels where the best opportunities exist for creating and maintaining quality shrubland habitat over the long-term to benefit declining priority shrubland species. We then employed the Strategic Growth Policy criteria which, as stated in chapter 1, direct the Service to acquire interests in lands that support the recovery of federally listed species, contribute towards achieving waterfowl population objectives, and conserve migratory birds of conservation concern. In doing so, we consulted numerous data layers such as bird migration radar mapping, bird conservation plan focus areas, representative species modeling (e.g., prairie warbler), and threatened and endangered species occurrences (bog turtle, northern red-bellied cooter). We looked for the greatest overlap of all these data layers and drew preliminary lines around potential areas for Service acquisition. In many areas we were able to encompass at least two of the Strategic Growth priorities. For example, the Pachaug-Ledyard Focus Area in Connecticut includes areas that are important to the federally listed piping plover (*Charadrius melodus*). This area is also a top priority for migratory birds in four major national bird prioritization plans. In other areas we were able to encompass all three Strategic Growth priorities. For example, the two RAFAs in southeastern Massachusetts include critical habitat for the federally listed northern red-bellied cooter, landbird focus areas, and highly ranked NEC parcels.

Piping plover



Gene Niemi/USFWS

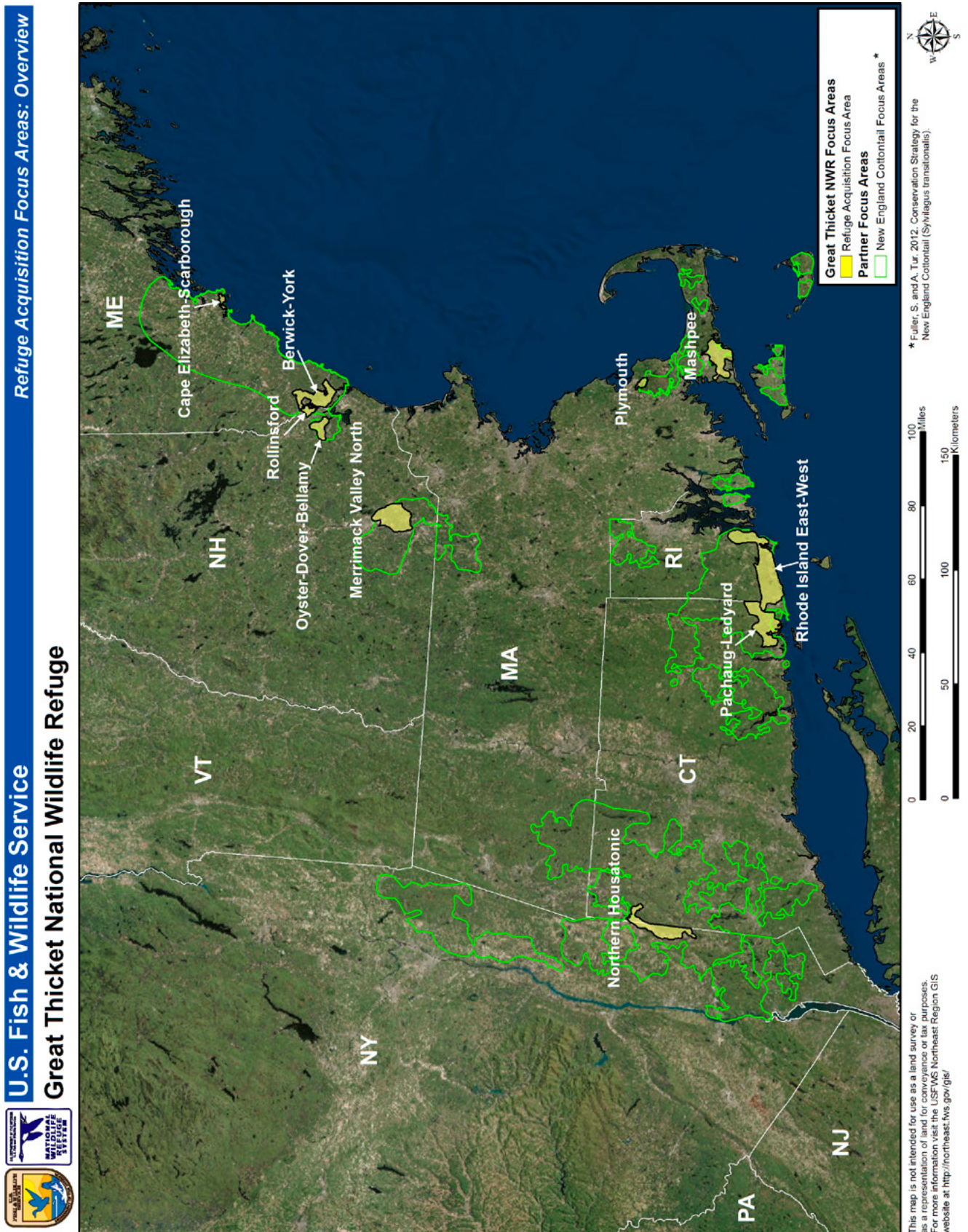
We presented preliminary land acquisition focus areas to a wide range of representative groups including our state partners and Service colleagues. Through thoughtful discussion and deliberation we refined the line work and settled on 10 RAFAs. Map 3 shows the general area of the RAFAs in relation to the NEC Focus Areas.

Refuge Acquisition Focus Areas

The 10 proposed RAFAs are distributed throughout six Northeast states. As noted in chapter 1, we embraced a unique approach in which we identified target acres within each RAFA. The broad, conceptual RAFAs encompass about 257,639 acres while the target acquisition acres add up to the PPP-approved 15,000 acres (see Table 1 below). We turned to the NEC Conservation Strategy to derive the specific target acres for each RAFA. For each NEC Focus Area, State Land Management Teams and the NEC Technical Committee estimated acres of shrubland habitat the partners could be expected to contribute on currently secured conservation lands. They also estimated the “need for voluntary participation” to provide additional shrubland beyond secured lands that would be needed to meet NEC habitat and population goals. We developed our target acres using the “estimated need for voluntary participation” in each area.

This approach of target acres embedded in larger RAFAs differs from the traditional refuge approach in which we draw definitive lines on the landscape, identify every parcel within those lines, and propose to acquire a fee or easement interest in each parcel. We believe our proposal is more suited for landscape-level conservation because it provides maximum flexibility for land protection opportunities. It will allow us to help state land management teams react to willing seller opportunities and secure key parcels with respect to important core/source NEC populations.

Map 3: Proposed Refuge Acquisition Focus Areas: Overview



We will seek to acquire tracts in close proximity to partners to allow the Service and partners to pool management resources, and provide greater certainty that shrublands would continue to be managed over the long term. The high degree of certainty of long-term management provided by Service acquisition was identified as an important contribution to the successful implementation of the NEC Conservation Strategy and was considered during the Federal listing evaluation process for the NEC.

Table 1: Refuge Acquisition Focus Areas

Focus Area	Total Acres in Focus Area	Target Acreage for Service Acquisition
Cape Elizabeth-Scarborough (ME)	3,254	~800
Berwick-York (ME)	26,410	~2,000
Rollinsford (NH)	4,705	~500
Oyster-Dover-Bellamy (NH)	10,913	~500
Merrimack Valley North (NH)	36,495	~500
Pachaug-Ledyard (CT)	38,208	~3,500
Plymouth (MA)	3,698	~500
Mashpee (MA)	28,633	~1,500
RI East-West (RI Coast)	71,440	~3,200
Northern Housatonic (NY-CT)	33,883	~2,000
Totals	257,639	~15,000

We also developed criteria which will be used to evaluate and guide acquisition decisions on a parcel-by-parcel basis as willing seller opportunities present themselves. Our criteria are listed below, in order of importance:

1. Strategic Growth Priorities

The Service's Strategic Growth Policy lists three priorities for conservation: threatened and endangered species, migratory birds in decline, and waterfowl. We would acquire lands that contain or are in close proximity to the greatest overlap of these three priorities.

2. New England Cottontail

The NEC has been designated as a surrogate species for a variety of associated, high priority shrubland-dependent species. We would prioritize tracts that contain, are adjacent to, or are in close proximity to known populations of NEC.

3. Landscape Connectivity

We would give priority to parcels that can potentially provide critical connectivity between two extensive patches of habitat containing target wildlife species or shrubland-related habitat types.

4. Site Suitability

Prioritizing tracts that naturally lend themselves to sustaining shrubland habitat would allow us to use our resources more wisely and efficiently.

5. Site Feasibility

We would avoid acquisition of commercially zoned properties and approved residential subdivisions due to the higher cost per acre of those properties, and

because of the challenges we might face in managing habitats over the long-term that might potentially be surrounded by, or adjacent to, development.

6. Proximity to Partners

Acquiring tracts in close proximity to our partners would allow the Service and its partners to pool management resources and provide greater certainty that shrublands will continue to be managed over the long-term.



USFWS

American black duck

The **Maine and New Hampshire RAFAs** were located to provide Service acquisition assistance in areas that contain core or source populations of NEC and that are proximate to the existing Rachel Carson and Great Bay NWRs. Both refuges have identified goals and objectives for the restoration and management of shrublands and young forest in support of the NEC and declining shrubland birds in their approved CCPs. The NEC is a state-listed species in both states. Maine is the only State where the NEC is not facing competition from the non-native eastern cottontail.

The **Cape Elizabeth–Scarborough RAFA** contains two Important Bird Areas (IBA), with a third being considered for just the Scarborough area. Coastal parcels in this RAFA offer opportunities to help protect naturally persistent maritime shrubland along with associated coastal beach and marsh habitats important to the federally threatened piping plover and waterfowl such as the American black duck (*Anas rubripes*). Cape Elizabeth contains the largest known occupied patch of NECs in the states of Maine, New Hampshire, and Rhode Island. As such, rabbits in this area are used as a source for captive rearing efforts in other states.

The **Berwick–York, Rollinsford, and Oyster–Dover–Bellamy RAFAs** were designed to help provide shrubland landscape connectivity for the NEC and shrubland birds between the states of Maine and New Hampshire. The Maine side is considered a key area within the State for surrogate species such as the blue-winged warbler due to the presence of remaining farm ownerships and old field habitat. The Berwick–York RAFA also contains numerous rivers, wetlands, and ponds, and is known for supporting concentrations of SGCN such as the Blanding's turtle (*Emydoidea blandingii*). The New Hampshire seacoast area is characterized by naturally sustaining pitch pine-scrub oak communities that support shrubland bird surrogates, and strong landscape partnerships with the need for additional Federal assistance. The **Merrimack Valley North RAFA** is within the Merrimack North NEC focus area, for which the recently modified habitat and species goals reflect the commitment of conservation partners to support a viable population of NEC. The area supports the largest population of NEC in New Hampshire, hosts an IBA along the Merrimack River, and supports numerous shrubland bird surrogates.

The **Plymouth RAFA** in southeastern Massachusetts exactly matches the Critical Habitat area designated in 1980 for the Federal-listed cooter. As such, this RAFA includes a high concentration of kettle-hole ponds that function as cooter habitat. This RAFA also encompasses Massasoit NWR, created to help support the cooter. The Plymouth RAFA is adjacent to the Myles Standish State Forest and other areas within which the State is heavily involved in land protection efforts.

This area was located to allow the Service to help secure additional lands in support of cooter recovery efforts, and offer overlapping potential for Service assistance with shrubland and young forest protection for migratory bird co-management and possible NEC support. This particular area is within a designated landbird focus area for shrubland species, due to the importance of the pitch pine-scrub oak community.

Habitat preservation, enhancement, restoration, and management in support of cooter recovery plan goals will be a high priority for this RAFA. The 5-year review for the cooter recommends additional protection through fee acquisition, conservation easement, purchase of development rights or other means, of the most important pond shore habitats supporting the species in Plymouth County. Approval will allow Service acquisition, easements, and cooperative agreements to contribute open-canopy management for shoreline nesting areas and help maintain long-term corridor connectivity between ponds and turtle populations. Our intent is to create and maintain openings along shorelines to facilitate nesting, and secure key parcels linking populations to maintain and enhance viability. We will continue to coordinate with the MDFW and other conservation partners as acquisition and management opportunities arise.

The **Mashpee RAFA** was delineated to encompass a major stronghold for the NEC, the most consistent core/source population in Massachusetts, and represents opportunities for dispersal and translocation from this area. It is also an important area of overlap with a designated landbird focus area for shrubland birds, centered on the area's pine barren habitat. It is a highly suitable site for shrubland and young forest management in general, due to the extensive naturally sustaining pitch pine-scrub oak communities. There is a high degree of partnership opportunity in the area, and the centrally located Mashpee NWR was created with the intention of operating as a partnership refuge. The MDFW, Department of Defense, and many local non-profit conservation organizations are currently working with the Service in this landscape, sharing staff and equipment and cooperating in habitat management activities such as controlled burning for pine barrens and shrubland maintenance. The Mashpee NWR is already a member of a strong land protection partnership, and has established relationships with local towns and land trusts. We intend to continue partnership activities and to collaborate on management of acquired lands and easements and nearby partner lands. In this particular RAFA there are opportunities for no-cost transfers to the Service from partner organizations, and for our agency to enter into management agreements to co-manage lands.

The **RI East-West** and **Pachaug-Ledyard RAFAs** were located along the southern New England coast to allow overlapping opportunities for Service acquisition contributions to NEC partnership activities and migratory bird conservation efforts. This area has been shown to support important bird migration concentrations through recent Service-supported radar analysis of fall bird migration stopover sites (Buler and Dawson 2012, 2014). Refinement of this study is continuing with Service support. A fall banding station at Ninigret NWR, located within the RI East-West RAFA, has documented diversity and abundance of birds during fall migration over the last four years. Naturally persistent and successional shrubland habitats within a several miles-wide zone along the coast support both shrubland and forest-dependent birds that refuel on fruits provided by shrub communities in the fall. These RAFAs are also within NEC Focus Areas that currently host core populations of rabbits or represent State land management team intentions to restore NEC populations through habitat management and re-introduction efforts. These collaborative efforts also involve a captive breeding program at the Roger Williams Zoo in Rhode Island, refuge habitat management, hardening pens and reintroduction at the Rhode Island NWR Complex. As mentioned earlier, refuge staff has also been successful in using leases- temporary interests in land-to accomplish goals and objectives for shrubland management. Indeed, there are two known locations within this RAFA where landowners have expressed an interest in leasing their land rather than selling an easement.

The **Northern Housatonic RAFA**, along the New York-Connecticut border, focuses on the Ten Mile River/Webatuck/Mill Creek valley bottom and portions of surrounding forested slopes. This area was located to allow a Service contribution

to bog turtle recovery efforts, and offer overlapping potential for Service partnership assistance with NEC goals and shrub and young forest management opportunities for migratory bird co-management. Habitat management for shrubland species and the bog turtle can be juxtaposed and timed to benefit both. One of the greatest threats to bog turtles is the continued loss, alteration, or fragmentation of the species' highly specialized wetland habitat (USFWS 2001). This valley contains numerous bog turtle sites and includes wetlands that provide existing or potential bog turtle habitat and farmlands that offer wetland restoration opportunities for turtle habitat. We will strive to acquire and manage parcels with wet meadows and calcareous fens, with adjacent upland and wetland shrub habitats and young forest. Where possible we would also seek to restore former wetlands that were historically ditched, drained, and converted to agricultural fields.

We intend to continue to coordinate with our State and other conservation partners as acquisition and management opportunities arise. The recovery plan recommends the acquisition of bog turtle sites where available over time within this area. In coordination with the Service's New York and New England Field Offices and Bog Turtle Recovery Team, we will work to set back succession and control invasive plants using such management tools as mowing or mulching, biological control agents, herbicides, girdling red maple stems, and light grazing of livestock. The conceptual management plan in appendix A describes how we intend to manage shrublands for priority species, including the bog turtle.

Land Protection Options

In developing our proposed action, we considered several land protection options. Those options are listed below in no priority order:

Option 1: Landowner retains ownership and all use of property.

Option 2: Management and/or land protection measures by others.

Option 3: Less-than-fee-title acquisition (easement, lease, management agreement) by the Service.

Option 4: Fee-title acquisition by the Service.

Our proposal includes a combination of Options 1, 2, 3, and 4. We believe this approach outlines a selection of voluntary, flexible, and cost-effective methods of implementing Service policy of seeking only the minimal level of protection needed to accomplish refuge goals and objectives, and to acquire a Service interest only from willing sellers. These options would provide a menu of alternatives to be responsive to the preferences of local landowners interested in contributing to conservation, but who may or may not want to sell an interest in their lands.

In general, lands in which the Service has a real estate interest would be managed and administered by the nearest existing national wildlife refuge, at least in the short-term.

Option 1: Landowner Retains Ownership

Landowners who do not wish to convey their lands to the Service or another conservation entity may still like to improve their lands for wildlife. We may provide technical expertise or inform the landowner of incentive programs offered by the Service or its partners to assist in habitat conservation.

Landowners within a RAFA would not be subject to any additional obligation or regulation due to this designation.

Option 2: Management and/or Land Protection by Others

It is not our intent that the Service be the primary means of land protection within the larger RAFAs but rather, in combination with other partners and

landowners, to ensure sufficient habitat protection to establish self-sustaining populations of NEC and other shrubland-dependent species. We recognize that many of our partners have long-standing relationships with landowners in the NEC Focus Areas, and even within the smaller RAFAs. We also recognize that for a variety of reasons, such as management capability and feasibility, it is more logical for our state or other partners, rather than the Service, to acquire certain parcels. This proposal would enhance the availability of protection efforts by expanding the options available to the landowner, rather than compete or duplicate existing partner initiatives.

Our proposal complements the diverse menu of partner initiatives, such as the USDA voluntary landowner incentive programs included in the 2014 Farm Bill that are intended to restore wetland and wildlife habitat, and employ best management practices for land stewardship. Each of these voluntary programs, and similar state and locally based conservation alternatives, are important conservation strategies to promote an integrated and sustainable working landscape. Management and protection of land and related resources by others will continue to add to the larger goal of increasing habitat for shrubland-dependent wildlife.

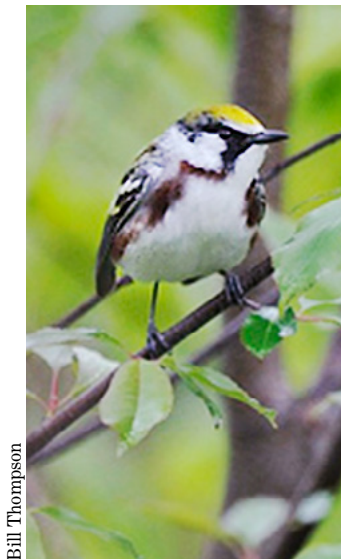
Following approval of this proposal, our intent is to continue working with our partners to determine which parcels are best suited for Federal acquisition. We would continue to collaborate with the NEC Technical Committee and the six state land management teams. We would also remain a part of the NEC Land Protection Working Group which is looking to track acquisition in NEC Focus Areas and to bring partners together once or twice a year to discuss land acquisition priorities. In this way, the Service would utilize the participation of the states and other partners to identify the most appropriate parcels for Service protection and to meet our mutual wildlife conservation goals.

Option 3: Easements, Leases, and/or Management Agreements

The Service acquires lands and interests in lands, such as easements, and management rights on lands through leases or cooperative agreements for the conservation of fish and wildlife and to provide wildlife-dependent recreational and educational opportunities. This option would employ long-term, renewable easements, leases, and/or management agreements as a means of protecting and managing land by purchasing only a partial interest from willing landowners, typically in the form of a conservation easement. Short-term leases may be used to protect or manage habitat until more secure land protection can be negotiated.

Conservation easements convey a partial, but permanent, interest in land to the Service. Other less-than-fee options include cooperative management agreements or leases, which convey management rights on a temporary basis. Similar to an easement, a lease represents an interest in the real estate for a specific period of time. Service easements are typically perpetual, while leases are temporary. The Code of Federal Regulations applies when the Service acquires interests in land via leases. We could post the property and protect it as a national wildlife refuge for the duration of the lease, provided the appropriate clause was agreed to by the landowner (lessor) who is granting the lease.

Easement interests in land are acquired at market value from willing sellers to accomplish the purposes of the refuge, although easement interests can also be donated by other agencies, organizations, and individuals. The underlying fee title to the property is retained by the landowner, leaving the parcel in private ownership. The Service and landowner agree to land-use practices that enable both to meet their conservation goals, as well as provide the landowner continued stewardship and management of these lands. In some instances, early



Bill Thompson

Chestnut-sided warbler

dialogue may reveal there are more suitable options offered by one of our other conservation partners.

We would negotiate, on a case-by-case basis, the extent of the rights that we would acquire. Those may vary, depending on the configuration and location of the parcel, the current extent of development, habitat management requirements, the needs of the landowner, and other considerations. The structure of such easements would provide permanent protection of existing wildlife habitat while also allowing habitat management or improvements and access to sensitive habitats, such as for endangered species or migratory birds. A conceptual management plan in appendix A describes how we intend to manage shrubland habitat for early successional species on easement or fee lands.

Properties subject to easements generally remain on the tax rolls, although the change in market value may reduce the assessment and ultimately the amount of property tax liability for the landowner. The Service does not pay refuge revenue sharing (i.e., funds the Service pays to counties in lieu of taxes) on easement rights.

In those instances where we identify conservation easements, we would be interested primarily in purchasing the rights necessary to protect the desired wildlife and habitat values along with wildlife management and/or public access rights. Easements are best employed by the Service as a conservation measure when: (1) only minimal management of the resource is needed, but there is a desire to ensure the continuation of current undeveloped uses, wildlife habitat conditions, public access, and to prevent fragmentation over the long term; and (2) a landowner is interested in maintaining ownership of the land, does not want it to be further altered, and would like to realize the benefits of selling development rights, management rights, and/or public access rights.

Option 4: Fee Title Acquisition

When and where appropriate, the Service would acquire parcels in fee title from interested willing sellers, thereby purchasing all rights of ownership. This option provides us the greatest flexibility in managing priority lands, and ensuring the protection in perpetuity of nationally significant wildlife trust resources, and providing opportunities to engage the public with wildlife-dependent recreation and education opportunities. Generally, the lands we would buy require more than passive management and may include controlling invasive species, mowing, or prescribed burning. (See appendix A for more information on potential habitat management techniques for shrubland and young forest habitats). We only propose fee-title acquisition when adequate land protection is not assured under other ownership scenarios, active land management is required, or we determine the current landowner is interested in a fee-title acquisition transaction and is unwilling to sell a partial interest such as a conservation easement. In some cases, it may become mutually advantageous to convert a previously acquired conservation easement to fee title acquisition, such as when a landowner is interested in selling the remainder interest in the land on which we have acquired an easement. We would need to conduct another appraisal to determine the market value of the residual land rights. We will evaluate this need on a case-by-case basis.

In order to determine the value of the land, either fee or easement, a real estate appraiser familiar with the local market would be contracted to appraise the property to determine its market value. The appraisal is based on comparable sales in the local real estate market and must meet stringent Federal and professional appraisal standards. Once an appraisal has been completed and approved by the DOI's Office of Valuation Services, we can present an offer to the landowner. The Service is required by Federal law to offer 100 percent of the

appraised market value for fee or less-than-fee acquisitions; however, we can also accept landowner offers of less than the appraised value via a donation.

Finally, the Service also has the authority to exchange land in Service ownership for other land that has greater habitat and/or wildlife value. Inherent in this concept is the requirement to get dollar-for-dollar land value with, occasionally, an equalization payment. Exchanges are attractive because they usually do not increase Federal land holdings or require purchase funds. However, they are often complicated and can take a long time to complete.

Costs

During planning for the proposed Great Thicket NWR, the Service identified 257,639 acres within 10 focus areas which span portions of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York. Of these 257,639 acres, the Service is seeking authority to acquire approximately 15,000 acres in fee title or conservation easements.

To determine the average per-acre cost for each of the RAFAs, we reviewed land purchases that were acquired for nearby national wildlife refuges for similar habitat types that we would acquire for the proposed Great Thicket NWR. For this exercise, we extrapolated a low-to-high range of values. Because the method of acquisition would be determined on a case-by-case basis for each landowner, it is impossible to pre-determine how many acres would be acquired in fee title and how many acres would be acquired in a conservation easement, so we have provided a low range based on the acquisition of conservation easements on all 15,000 acres and a high range based on the fee title acquisition of all 15,000 acres. This range in value is affected by the following factors:

- The per-acre value is affected by the land use associated with lands for purchase. Developed or developable lands have a higher per-acre value than wetlands or lands that, for a variety of reasons, may not be susceptible to development pressures.
- Per-acre value is also affected by parcel size. Most of the focus areas contain tracts of land that are relatively small. Parcel sizes on the order of 3 to 20 acres are much more common than larger (500 acres or bigger) parcels. The per-acre cost for acquisition tends to be higher for smaller parcels.

Costs associated with obtaining conservation easements range from 50 to 80 percent of the fee-title value of the property. Using a mid-range easement estimate of 65 percent of fee-title value provides a low end estimate for acquiring conservation easements on all 15,000 acres at \$83,980,000. The estimate for acquiring all 15,000 acres in fee title is \$129 million. Therefore, the total cost of the land acquisition envisioned for the proposed Great Thicket NWR would fall somewhere between \$84 million and \$129 million at current market values.

It is important to note that these costs are only provided as an approximation. There are many factors that would influence the costs associated with acquiring in fee or easement all 15,000 acres of the proposed refuge. These factors include donations, transfers, leases, management agreements, the ratio of fee-title to conservation easement purchases, and land value fluctuations over time.

Rusty blackbird



Bill Thompson

Table 2: Fee and Easement Costs by RAFA

Focus Area	Total Acres	Target Acres	Fee Title Cost per Acre	Fee Title Total Estimated Cost	Easement Cost per Acre	Easement Total Estimated Cost
Cape Elizabeth - Scarborough (ME)	3,254	~800	\$7,000	\$5,600,000	\$4,550	\$3,640,000
Berwick-York (ME)	26,410	~2,000	\$7,000	\$14,000,000	\$4,550	\$9,100,000
Rollinsford (NH)	4,705	~500	\$7,000	\$3,500,000	\$4,550	\$2,275,000
Oyster-Dover-Bellamy (NH)	10,913	~500	\$7,000	\$3,500,000	\$4,550	\$2,275,000
Merrimack Valley North (NH)	36,495	~500	\$7,000	\$3,500,000	\$4,550	\$2,275,000
Plymouth (MA)	3,698	~500	\$9,000	\$4,500,000	\$5,850	\$2,925,000
Mashpee (MA)	28,633	~1,500	\$9,000	\$13,500,000	\$5,850	\$8,775,000
Pachaug-Ledyard (CT)	38,208	~3,500	\$11,000	\$38,500,000	\$7,150	\$25,025,000
RI East -West (RI)	71,440	~3,200	\$11,000	\$35,200,000	\$7,150	\$22,880,000
Northern Housatonic (NY-CT)	33,883	~2,000	\$3,700	\$7,400,000	\$2,405	\$4,810,000
Totals	257,639	~15,000		\$129,200,000		\$83,980,000

Additional costs associated with this proposal include boundary posting, interpretive signs, and other outreach materials. These costs can be estimated at approximately \$3,000 per 1,000 acres, for a total of roughly \$45,000 across the project area.

There may be a long-term need to hire some additional staff for the proposed Great Thicket NWR, depending on the proximity of newly acquired lands to existing national wildlife refuges. Some additional workforce requirements may only be seasonal or temporary. These needs would be evaluated on an individual-refuge basis as budgets allow.

Funding

There are many costs associated with Federal land acquisition, including direct land costs and incidental real estate expenses associated with appraisals, surveys, title work, and relocation expenses. The main source of appropriated dollars for fee title or easement acquisition is the Land and Water Conservation Fund (LWCF). The primary source of income to this fund is fees paid by companies drilling offshore for oil and gas, as well as oil and gas lease revenues from Federal lands. Additional sources of income include the sale of surplus Federal real estate and taxes on motorboat fuel. Other sources of Federal land conservation funding include the Migratory Bird Conservation Fund and North American Wetlands Conservation Fund. In many cases, our land conservation goals are achieved by combining Federal funds with funding from state wildlife agencies, Federal partners, private non-profit groups and other partners. Indeed, we believe the establishment of a new national wildlife refuge would create even more of an opportunity and justification for our partners to participate and leverage their human and financial resources within a partnership context to support mutually beneficial programmatic and landscape agency goals.

There are also several funding sources for landowners who wish to participate in shrubland conservation by conducting habitat restoration or selling temporary easements on their land, but who are not willing to sell fee title to the Service. Some of these funding sources come from the Service in the form of Partners for Fish and Wildlife and Coastal Program grants, as well as Competitive

State Wildlife Grant agreements. Other funding sources come from NRCS programs such as the Environment Quality Incentives Program and the Wetland Reserve Easement Program. Further, additional resource accomplishments could be realized using U.S. Department of Transportation funding and U.S. Environmental Protection Agency (USEPA) funding. These funding sources provide opportunities to stimulate vital resource accomplishments and decrease Service costs over the long-term.

It is important to note that given the costs associated with this project and in light of our willing-seller-only approach, it could take decades to acquire fee or easements for the entire 15,000- acre proposed refuge. A long-term commitment of this nature is not at all uncommon when compared to the status of other Refuge System land protection projects.

Public Use

National wildlife refuges are managed specifically for wildlife and wildlife habitat. While wildlife comes first with regard to management of these lands, public uses may be allowed when they are found to be both appropriate and compatible. An appropriate use finding is the initial decision-making process a refuge manager follows when considering whether to allow a proposed use on a refuge. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility.

In the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57; 111 Stat. 1235) (Improvement Act), Congress directed the Service to give special consideration to allowing wildlife-dependent recreational activities on national wildlife refuges. The six wildlife-dependent public uses that were identified in the Improvement Act are hunting, fishing, wildlife observation, wildlife photography, environmental interpretation, and environmental education. These uses do not require an appropriateness determination. However, a refuge manager must still determine if these uses are compatible with the mission of the Refuge System and the purposes of the proposed refuge before permitting them.

As lands are added to the proposed Great Thicket NWR, the refuge manager will make a pre-acquisition compatibility determination. The purpose of a pre-acquisition compatibility determination is to inform the public, prior to acquisition, which pre-existing wildlife-dependent recreational public uses would be allowed to continue on newly acquired lands. Pre-acquisition compatibility determinations only apply to existing wildlife-dependent recreational public uses and are intended to be short-term in nature, bridging the gap between acquisition of refuge lands and completion of refuge CCPs or step-down plans.

Hunting upland game birds



USFWS

Regarding lands the Service acquires that do not have pre-existing wildlife-dependent recreational public uses, these lands would be closed to the public until a CCP or a step-down management plan is completed. At such time we would review each parcel that is acquired and we would manage public uses in accordance with our policies. At this juncture, it is difficult to state with certainty what uses may or may not be permitted on lands that may be eventually acquired as part of this proposal.

In particular, many of our state partners have asked whether we would open newly acquired lands to hunting. We generally open new lands for hunting when we have acquired manageable units and when those units can biologically, ecologically, and safely accommodate hunting within state guidelines. The following facts demonstrate

the Service's commitment to providing access for hunting and other wildlife-dependent activities on refuge lands:

- Hunting is one of six priority public uses of the Refuge System, as directed by the Improvement Act.
- All six priority uses, including hunting, have been pre-determined to be appropriate uses of refuge lands, thus negating a requirement for an "appropriateness review" to which non-priority uses are subjected.
- Executive Order 13443, *Facilitation of Hunting Heritage and Wildlife Conservation*, directs DOI and its component agencies, bureaus, and offices "to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat."
- Currently, 18 national wildlife refuges within the six-state project area are open to some form of hunting.

By law, all refuge lands are closed to public use until opened. The process for opening a refuge to hunting requires the following:

- NEPA compliance, usually through preparation of an EA and a Finding of No Significant Impact;
- Compatibility Determination by the refuge manager, and concurrence from the Regional Chief of the Refuge System;
- Hunt Plan;
- Compliance with Section 7 of the ESA (Intra-agency consultation);
- Concurrence from the state fish and game agency and possibly Tribal concurrence;
- Publication of special refuge regulations;
- Outreach plan; and
- News release.

Refuge managers must consider the time commitment involved in completing the process outlined above, along with safety and other logistical issues, when considering opening a refuge to hunting or other visitor uses. As previously mentioned, in the case of pre-existing wildlife-dependent public uses, the refuge manager could conduct a pre-acquisition compatibility determination to keep those lands open between the time of acquisition and the time of completing the above process.

It is important to note that easement acquisition, now proposed to account for 50 percent of the 15,000-acre acquisition proposal, generally does not give the Service rights to manage hunting. Typically hunting rights and the ability to control public access are reserved by the landowner.

Another important consideration in this discussion is the fact that acquisition of 15,000 acres would take considerable time. The earliest year that the Service could request funding from LWCF is 2017, and more likely 2018. Based on

Alternatives or Actions Considered but Eliminated from Detailed Study

experience and recent funding, it would likely take several decades to reach the 15,000-acre goal for the proposed Great Thicket NWR.

There were some alternatives or actions that were suggested to us or that we discussed internally but chose not to analyze in detail. Below we discuss why we eliminated them from further analysis.

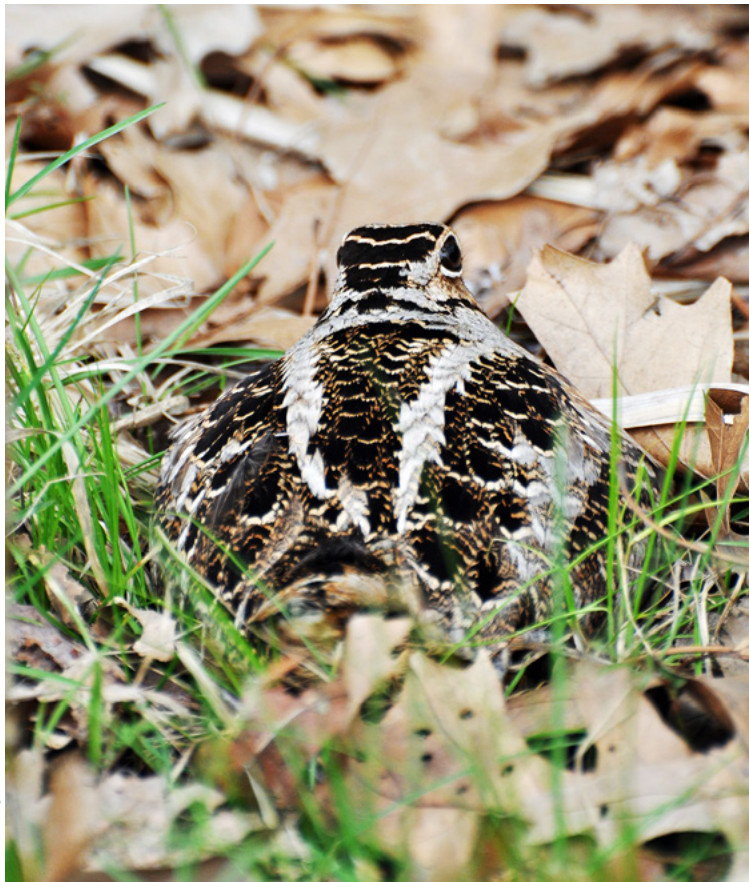
The Service would only acquire lands in RAFAs that are adjacent to existing national wildlife refuges: While this alternative would result in administrative efficiencies, it would exclude half the states we have been coordinating with, namely New Hampshire, Connecticut, and New York. It would also exclude many high priority NEC Focus Areas. All six states that we have been working with fully support increased refuge acquisition authority and have specifically asked for the Service to assist in protecting and managing shrubland in their state. All our partners, including the states, agree that the increased level of long-term certainty of management that would result from Service ownership is critical to the success of the overall shrublands conservation effort. Furthermore, we did not feel that we could make a biologically meaningful contribution towards restoring and maintaining the amount of shrubland habitat needed in the Northeast Region by focusing our efforts on only three states. Indeed, the concept of this alternative would be based largely on administrative justification and management capability rather than on SHC and LCD.

The Service could acquire all easements and no fee: Although we thought about a specific alternative where the Service would acquire only easements and no

fee lands, we realized that, as mentioned above, Service policy already addresses this issue. Our land acquisition policy allows for the purchase of only easements within this proposal, however, it is possible that some landowners would not be interested in selling an easement and would only be willing to sell their land in fee title. Proposing an alternative that only allows us to acquire easements could limit us from acquiring important shrubland habitat and would not address the purpose and need of our proposal. As such, under the alternative B, the Service would acquire whichever interest in land is needed to accomplish its management objectives, and whichever interest the landowner is willing to sell.

Chapter 3 describes the physical, biological, and socio-economic resources that could be impacted by the alternatives described in chapter 2. In the first section of the chapter, we describe the resources that pertain to the entire AOI. Despite being spread across six states, the AOI has many features that are common across the landscape. For the second section, we group RAFAs into smaller sub-regions and describe particular resources for those smaller sub-regions and how those resources differ from the other sub-regions.

American woodcock



Matt Poole